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ABSTRACT

If the scope of current cable television (CATV) content could be broadened to include interactive television services, it is conceivable that these new services would provide reasonable substitutes for the interactive communications that people miss when their surroundings change from a small community to a large urban community, and would thus reduce the individual social and political alienation caused by the one-way nature of our dialogue with society. A Time-Shared, Interactive, Computer-Controlled, Information Television (TICCIT) system, briefly described in the appendix to this paper, could reduce this alienation by providing interactive access to individualized instruction through television, community information, participation in the decision-making process, political information, protective information, job information, social care, social services information, private social conversation through Picturephone, news and mail, companionship, shopping, and gambling. (Author/SH)

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INTERACTIVE TELEVISION SOFTWARE FOR CABLE TELEVISION APPLICATION

KENNETH J. STETTEN

THE MITRE CORPORATION
WASHINGTON OPERATIONS

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JUNE 1971

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ABSTRACT

This paper is an attempt to broaden the consideration of Cable Television (CATV) content to a large new range of interactive services having high potential social impact. Much of the "software" content is either already available or can be subscriber-generated.

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SECTION I
INTRODUCTION

This paper proposes a broadening of the scope of current cable television (CATV) content: planning to include a wide new range of services which would have high potential social impact: interactive television services. Interactive television is made feasible by combining cable television with a system like MITRE's TICCIT* system, which is described in the Appendix. The following assumptions underlie my rationale.

(a) We are interested in expanding the services to the general public through their home television sets.

(b) We believe that these services should be available on demand, not scheduled. This convenience is important to the successful "marketing" of these services.

(c) We believe that conventional "Educational television" alone will be adequate either for rigid instruction in courses where there is a large body of information to impart or to provide a substitute for other services described below.

An underlying theme of these candidate services is to reduce individual social and political alienation (or de-alienation), caused by the one-way nature of our "dialogue" with society. By de-alienation I mean establishing reasonable subsitutes for the interactive communications that people miss when their surroundings change from a small community to a large urban community.

The media, up to now, have been used almost entirely in a one-way mode: they transmit information to the public who sees them as increasingly insensitive and resistant to feedback from individuals, at least relative to what individuals feel they should be receiving. This leads to the commonly expressed feeling of impotency shared by concerned people everywhere, both young and old, when they fail to influence the course of events in their community and nation.

*Time-Shared, Interactive, Computer-Controlled, Information Television

SECTION II
SERVICES POSSIBLE

The following are examples of services that could work to reduce this alienation. The economic, technical, legal and political feasibility of the services suggested is the subject of other work by this author and others.

EDUCATION

We need to return to the Socratic method of individualizing teaching (the sitting-on-a-log approach), where there is a continuing dialogue between teacher and student. We wish immediate response and reinforcement to the student, individual control over the pace and content of the material; an ability to stop and start the material whenever the student desires; and, we want facilities that will permit the student to proceed at his own pace. Not only should formal education be convenient and responsive and fun, but it should be totally disassociated from the "lockstep" features we have all grown to abhor. I speculate that, regardless of the production imagination used, when large bodies of knowledge are to be covered, most students beyond the elementary level will find scheduled cinematic learning (ETV) not much more acceptable than they have in the past; however, I will be delighted to be proven wrong in this regard. Video cassettes will be very important to this new form of instruction, but I think their use must also be managed (like conventional textbooks) economically, to maintain student interest when working by himself.

DEMOCRATIZATION

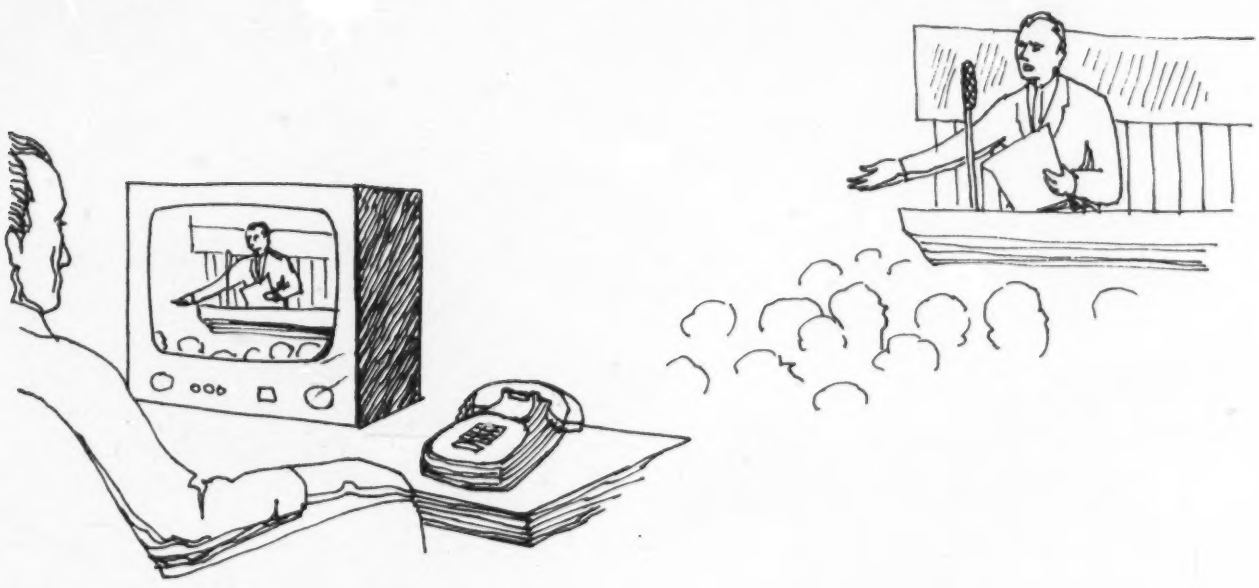
The voice of a speaker standing on a soapbox will reach only those few within the range of his voice. Even the local organizational services provided by CATV for special groups cannot provide response information at the personal level, cannot interact. (Note

TODAY'S SOAPBOX MENU
1. ANACOSTIA RADICAL DIGEST
2. "FALLOUT" POETRY
3. SPRING PRUNING OF ROSES
4. FREE UNIVERSITY NEWS
5. REASONS FOR NOT WIDENING OAK STREET

that interactive material automatically separates itself demographically without any further geographical segmenting of the CATV channel.) If the home terminal allows us to access poetry, radical newspapers, or anything else that groups or individuals wish to make available to the community—on demand—we have successfully separated the media from the message. In other words, each individual could have the economic and physical ability to express his thoughts to anyone who wishes to "tune in on them." He accomplishes this by placing his thoughts in the TICCIT data base, and the TICCIT "menu" constantly lets the whole community know what is available for instant at-home subscriber controlled accessing.

PARTICIPATION

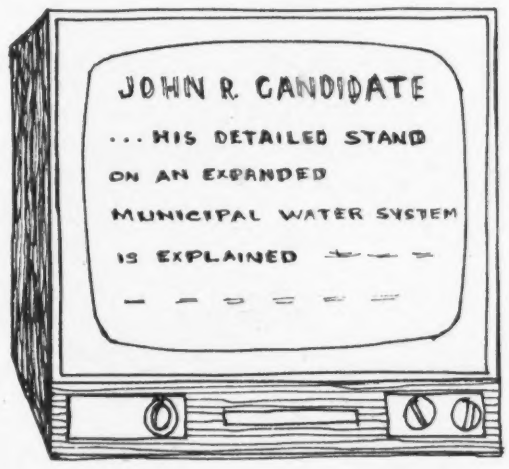
Using the home terminal to applaud or to boo a member of the school board, while the meeting is going on, or to ask pointed questions, once again allows the



individual to establish closer contact with the decision-making process affecting his family, home and community. (The same technology allows feedback to a live teacher on CATV, if desired–a Stanford University interest.)

POLITIZATION

At election time, a citizen can access–on demand–information on candidates, their position on issues, an explanation of referendum items (e.g., specific political platform positions for comparison). If desired, he may review this material prior to visiting the polls.



PROTECTION

The same alienation that disheartens the average citizen is an advantage to the criminal. It allows him to roam undetected in urban society. Placing mug shots of criminals and photographs of stolen cars in the data base for browsing or indexed retrieval allows concerned citizens to be on the alert for dangerous persons and to help their police force in a meaningful way. Signature and credit-card checking that utilizes such an economical graphic display network can have a major economic effect on credit-card use. Automated alarm systems have frequently been utilized, but the use of the

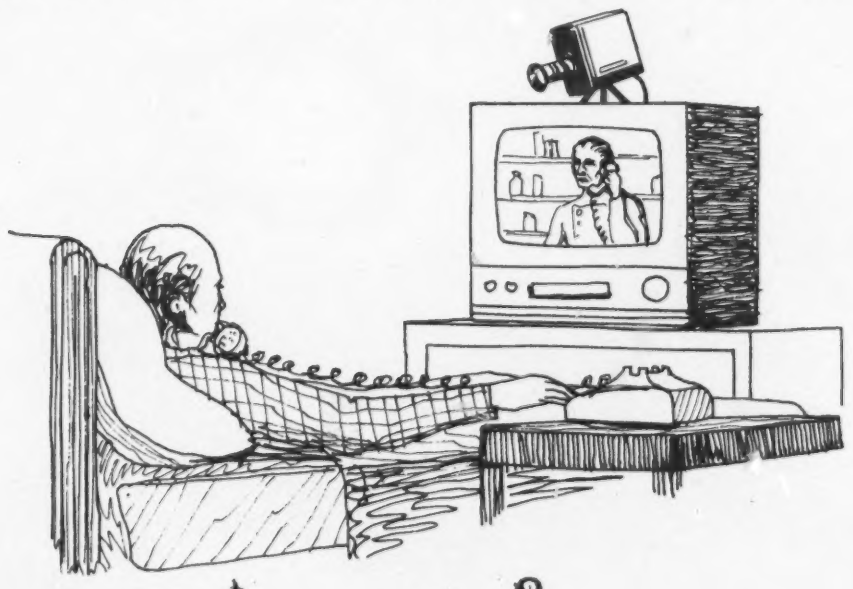
two-way visual system described below under INTERACTION allows correction for the false alarm problem and reassures the traveler that his fireplace is still there.

EMPLOYMENT

Again, accessing on demand detailed information on job openings (from the state employment agency?) along with photographs of the place and people employed there could greatly enhance matching needs of the individual and the employer, creating the advantages found in a small community.

SOCIAL CARE

Use of the even more futuristic two-way TV-PHONE (an inexpensive version of Picturephone) allows such services as a substitute for home visits by physicians, followed



by telediagnosis and prescription; social counseling; probation checking; drug monitoring; not to mention interaction with a live teacher in conjunction with mechanized systems.

INFORMATION

Presently, social protocol does not allow the use of display advertising for most social services (for example, social security information, VA information, health care information, food stamp information, etc.). It does not require a large stretch of the imagination to consider expanded "yellow pages" for these social services, again interactive, available to the citizen on demand.

INTERACTION

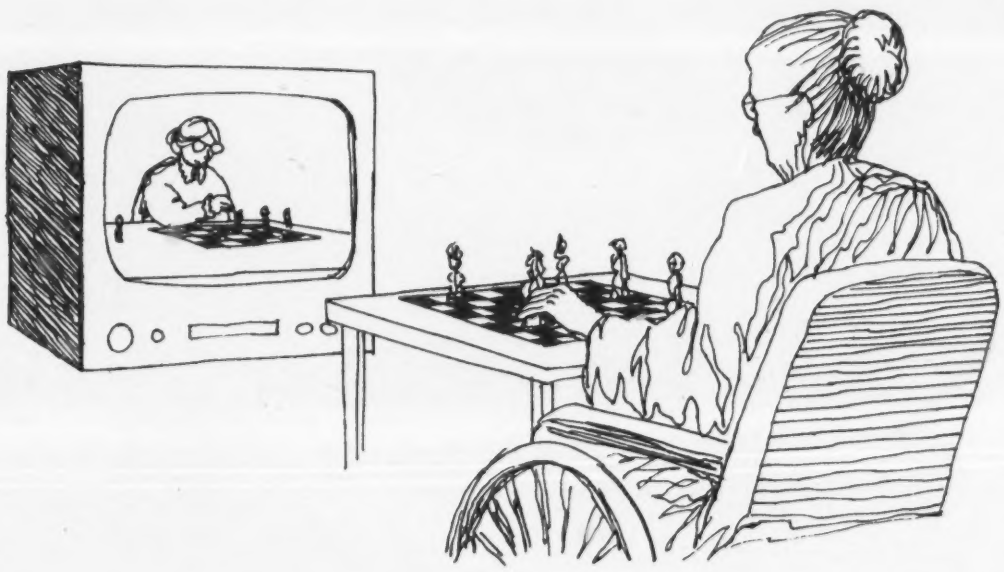
The CATV version of Picturephone (a common carrier function), which we've dubbed TV-PHONE, allows many more private social interaction options. My imagination boggles at the possible impact of this. Channel space should be allocated for such a function: unplanned, undirected use of this new "face-to-face" communication possibility Anyone who doesn't appreciate this is either too old to be romantic or too young to have his children living away.

COMMUNICATION

The ability to access yesterday's edition of the world's newspapers on demand, section by section, and paying only for what is used, and even to deliver mail, are both, to me, technologically and economically realistic goals for the not-too-distant future (5–15 years), using some version or extrapolation of MITRE's TICCIT concept.

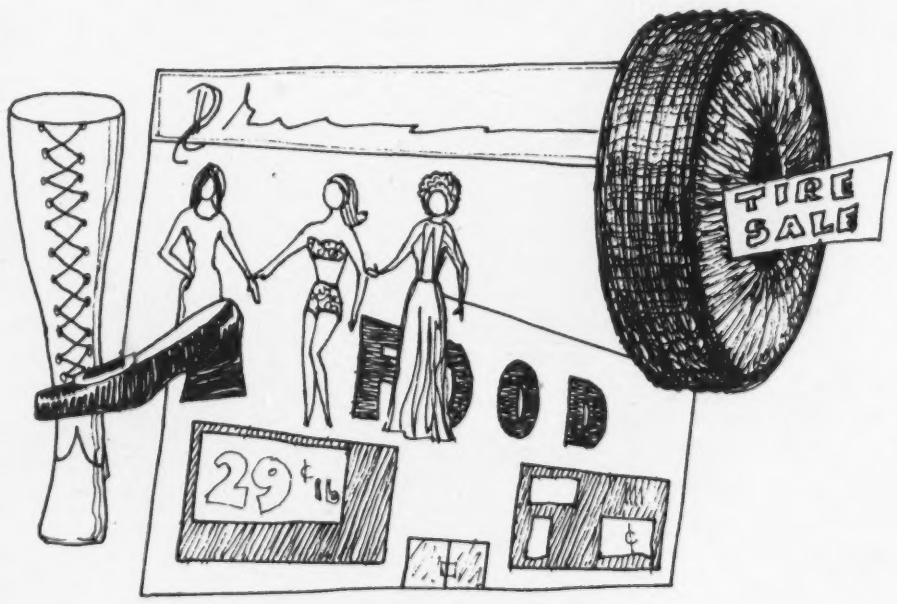
COMPANIONSHIP

Especially for the recluse, the invalid, and the aged, but also for others, we think that the machine's ability to play games with the subscriber, such as bridge, chess, black-jack, etc., will be great fun. I can easily imagine a cult of computer nuts growing up around such programming. Two-way games with other shut-ins are quite feasible.



SHOPPING

Again, for the shut-in, but also for the person not willing to fight the traffic and crowds downtown, the graphic capability of the TV to allow tele-shopping for the latest bargain should offer new services for which there is a direct measure of reward for business: expanded gross sales revenue.



GAMBLING

Off-track betting, and other types of gambling, could be administered with the ultimate efficiency via such terminals. The television display not only can show the odds and the results of the bet, but also the action itself, for example, horse racing. Subsidy of education with off-track betting via this means would be particularly pertinent; a piece of the action could subsidize a large part of the cost of the interactive hardware installation used for whatever purposes.

APPENDIX

BRIEF DESCRIPTION OF TICCIT

TICCIT provides computer-generated or controlled information that can be selectively received and displayed by individual TV sets. Utilizing one television channel on a wideband cable, 600 separate TV sets can receive separate information provided by the computer at a typical rate of once every 10 seconds. A local signal "refresh" device which incorporates a video cassette recorder allows the TV screen to display the information at the standard television rate of 60 fields per second. Using either the telephone or the cable system, each subscriber can call for any kind of information the system is designed to provide, independently of all other subscribers. Pictures and sound can be sent as well as printed text. At the present time, software programs for this system are being designed under the sponsorship of the National Science Foundation to provide individualized educational courses for home or school use. These types of courses could soon make it possible for people to take accredited courses at home, using computer-aided instructions and computer-aided grading systems, thereby permitting people to obtain a large part of their college education without attending formal classes. This approach is being seriously considered by the State University of New York under the "open university" concept.

The TICCIT system also provides capabilities for selective distribution of materials during "off hours" so that, for instance, a movie or book or newspaper could be sent to a subscriber's video cassette recorder to be stored for later display on his TV set whenever he wants it. Thus, he could receive and record daily news transmissions or take courses in French or mathematics which utilize conventional filmed lectures, interlaced with one-frame-at-a-time questions, equations, etc., for "stop-action" perusal or study. In addition, the subscriber could, under his own control, request socially and politically oriented services for his personal viewing.

Excluding the costs of a home TV cassette recorder with a single frame refresh capability, it is estimated that by 1975 such services might be provided at a cost of 25 cents or less per terminal hour, depending on hardware costs and the extent of utilization of the system.

It is sufficient here to point out that the enormous capacity of wideband telecommunications cable systems, when used in conjunction with appropriate "head-end"

programming, makes it possible to provide a great many educational, information retrieval, and other services that are entirely outside the realm of conventional TV programming and CATV distribution systems.

The TICCIT Computer System consists of an inexpensive mass storage, for example discs, to store all the material to be sent to individual users, including pictures, alphanumerics, voice and computational routines; a fast minicomputer with specially tailored indexing and retrieval software; and a special high-speed electronic system to convert computer output into TV display output.